



THE EVOLUTION AND MATURITY OF SIMULATION IN HEALTHCARE THROUGH THE YEARS: THE POWER OF THE SIMULATED EXPERIENCE

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ABSTRACT

Simulation is no longer a buzz word that is attached to the aeronautical industry or automotive sector. In the last ten years the use of sophisticated simulation has become a mainstay in the healthcare field. Simulated models ranging from low fidelity models to high fidelity mannequins are being utilized in clinical training. The inclusion recently of machine learning and artificial intelligence is becoming predominant in the field of simulation. With all these great advances in the field of simulation it is important to understand the trajectory of growth in this burgeoning field. It is truly a field of practice where healthcare providers and teachers must respect the past and embrace the future.

KEY WORDS: Simulation, Fidelity, Pilots, Strategies, Effectiveness.

INTRODUCTION:

The pedagogy of simulated experiences in healthcare has been in existence for many years. One must merely think of the training method utilized for teaching cardiopulmonary resuscitation to align to this mode of learning. While there are many methods and approaches to simulation, the typical one is the learner receiving some pre-work to complete on their own and the establishment of learning objectives (pre-brief), performing or watching the actual simulation itself, and then discussing the experience in a facilitated, debriefing session with their co-learners and educator.

The Learning:

It is said that the learning comes from the debriefing session. The educator is trained on the debriefing approach so that they can provide feedback (unilateral conversation – you were not safe when you were transferring the patient) to debriefed discussion on reasonings, feelings, successes, and areas for improvement as a collective. Rationale thinking strategies are also utilized where the entire group learns from one another through lived experiences and knowledge. This approach is utilized, mirroring the military who extracted information from pilots upon their return from conducting sorties during war time. Information was then utilized to further plan and plot subsequent strategies to continue the mission at hand. First utilized by anaesthesiologists for the purpose of teaching intubation in the 1960's, the first human manikin developed was in 1966. Sim one was a tool to make simulation training safer and more accessible for the learners. The simulator cost approximately \$100,000 USD to create however it was not received well in the community very well as it was deemed too expensive for commercialization. Coupled with an overall resistance to an alternative to the conventional apprenticeship model of training. Abrahamson (1969).

Use of Strategy in Simulation:

One of the key strategies that arose in the early component of the millennium was the utilization of simulation to assist in the educating and training of healthcare practitioners. Kohn et al., (2000) produced a critical work titled "To Err is Human: Building a Safer Health System". This piece focused on the prevalence of errors in the medical field of up to 7000 per year. As a result, patient safety in the health care system was brought to the forefront of the medical and educational psyche. Up to 1.5 million medication adverse events occurs every year in the United States of America.

According to Gaba (2004), "simulation is a technique—not a technology—to replace or amplify real experiences with guided experiences that evoke or replicate substantial aspects of the real world in a fully interactive manner". Kyle & Murray (2010) state, "Clinical simulation is pretend for the purpose of improving skills and behaviours that will beneficially impact someone else. Clinical simulation is not fakery, not a con game in which the purpose is to trick learners for one's own benefit". The overall goal in most simulation learning sessions, is the underpinning of quality of care and patient safety in the educational context to ensure those evidence-based best practices are utilized on actual patients when the time and need presents itself. The evidence clearly depicts that simulation advances self-efficacy and skill mastery amongst its participants.

Healthcare Educational Dilemma:

Healthcare has also struggled with the apprenticeship model with declining clinical placements/internships and preceptorships being available to post-secondary learners. Simulation is a method to augment this type of learning. Foundational

competencies are easily taught using this approach, while high acuity/low frequency events can also be taught. A landmark study conducted by Hayden, Smiley, Alexander, Kardong-Edgren, and Jeffries (2014) involving undergraduate nursing students across the United States indicated that the use of healthcare simulation to replace up to fifty percent of student's clinical time was just as effective when compared to students who solely received clinical field experiences. Viewing the results from the lens of patient safety, the students were equally safe practitioners. The importance of this study is that the potential to augment the clinical experience with expanded utilization of simulation will help to decrease clinical placement requirements in the hospital, long-term care, and community settings.

Many different types of simulation have been developed through the years. High-fidelity (high realism – human simulators, simulated participants) through to low-fidelity (low-realism – task trainers) and everywhere in between. Combining these levels is known as hybrid simulation. An example of this is where multiple learning objectives including the task at hand are being practiced/assessed. For example, a simulated participant can be utilized with an IV arm for a practitioner to be trained in IV insertion while also practicing therapeutic communication with their patient.

With the acceptance of simulation as a viable teaching pedagogy backed by research, this addresses many needs in the healthcare system.

CONCLUSION:

Heavy workloads create challenges when students are in the practice settings. Many healthcare practitioners state a lack time to adequately mentor and supervise student activities and fear students are not adequately prepared for the busy units. Students are prohibited from practicing many psychomotor skills on clients without a prior demonstrated level of proficiency and application of knowledge. As client safety is never jeopardized, students' exposure to learning opportunities, confidence, and sense of team is challenged within the status quo. This dilemma is plaguing all schools of healthcare and will continue to impact program requirements. Cumulatively the impact will be felt most strongly in student practice placement options, opportunities, and experiences.

Another dilemma facing health care education today is that of providing meaningful experiences in team-based learning and care. Simulation studies and case scenarios (high to low fidelity) have been created to fill this growing need. As we perfect the art, science and practice of Simulation, we will be able to provide real life experiences in a controlled safe manner such that when students arrive at their clinical placement, they are well trained and ready to hit the road running in their clinical practice.

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